

## BEFORE THE PUBLIC SERVICE COMMISSION OF SOUTH CAROLINA

Docket No.: 2019-224-E

South Carolina Energy Freedom Act (House Bill 3659) Proceeding Related to S.C. Code Ann. Section 58-37-40 and Integrated Resource Plans for Duke Energy Carolinas, LLC

**VOTE SOLAR’S COMMENTS IN  
RESPONSE TO DUKE ENERGY  
CAROLINAS, LLC AND DUKE  
ENERGY PROGRESS, LLC’S  
MODIFIED 2020 INTEGRATED  
RESOURCE PLANS**

Docket No.: 2019-225-E

South Carolina Energy Freedom Act (House Bill 3659) Proceeding Related to S.C. Code Ann. Section 58-37-40 and Integrated Resource Plans for Duke Energy Progress, LLC

Pursuant to S.C. CODE ANN. § 58-37-40(C)(3) and Order No. 2021-447, issued by the Public Service Commission of South Carolina (the “Commission”) on June 28, 2021, Vote Solar submits these comments in response to Duke Energy Carolinas, LLC and Duke Energy Progress, LLC’s (“DEC” and “DEP” and, collectively, “the Companies”) ‘Modified 2020 Integrated Resource Plans,’ filed on August 27, 2021 (collectively, the “Modified IRPs” or “Plans”). These comments assess the extent to which the Modified IRPs sufficiently address the concerns identified and revisions required by the Commission’s Order.

The Companies implement only some of the Commission-required revisions in their Modified Plans. The Companies’ cherry-picked implementation of several Commission directives, including its directive to choose a “preferred” portfolio, make the Plans insufficient and noncompliant with the Order. The expanded buildout of gas-fired

resources contemplated in the Modified Plans’ “preferred” portfolio further undermine the prudence and reasonableness of the Modified IRPs, despite concerns from the Commission around long-term risks associated with over-commitment to gas generation<sup>1</sup> and the identified goal of carbon reduction acknowledged by the Companies.<sup>2</sup> Accordingly, Vote Solar recommends that the Commission direct additional revisions to the Companies’ Plans, to be implemented in the IRP Update and 2022 IRPs.

## **I. INTRODUCTION**

Commission Order No. 2021-447 (the “Order”) required the Companies to implement a number of modifications to the Companies’ 2020 IRPs (collectively, the “2020 IRPs”), including several to be included in the Modified IRPs. Among these requirements was a directive for the Companies to select a “preferred” portfolio, to serve as a basis for forecasting future resources in other planning documents and guiding the Companies’ procurement, permitting, and construction plans. The Commission also identifies a concern that the 2020 IRPs may be “over-committing” to gas-fired generation through its plans to rapidly expand its gas-fired fleet through the planning period.<sup>3</sup>

The Modified IRPs implement several of the Commission’s revisions, and the incremental decreased total costs and increased solar deployment across portfolios in the Modified IRPs demonstrate the ability of zero-carbon resources to contribute to an affordable and reliable grid. However, the Modified Plans do not fully incorporate the

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<sup>1</sup> Order at 63.

<sup>2</sup> DEC Modified IRP at 3.

<sup>3</sup> Order at 63.

Commission's ordered revisions, and in particular, the Companies' implementation of the Commission's directive to choose a preferred portfolio fails to achieve the Commission's intention of identifying a single, clear set of resource decisions that will be pursued by the Companies.

The Modified IRPs' "preferred" Portfolio C1 implements only a subset of Commission-required revisions and accelerates the Companies' build-out of gas generation assets. While prioritizing retirement of the Companies' coal fleet will result in carbon reductions alongside cost savings for ratepayers, Portfolio C1 contemplates an increased investment in gas-fired generation—over 4 gigawatts of additional gas resources compared to the 2020 IRPs' Base Case with Carbon Policy—in exchange for accelerated retirement. Analysis provided in these comments shows that stranded asset costs associated with these resources could reach \$6.1 billion over those plants' lifetimes. Although the Companies identify potential alterations to their gas-fired fleet to address carbon emissions, the substantial costs and feasibility concerns implied by those alterations are not integrated into the Companies' planning process.

Given the Modified Plans' partial implementation of Commission directives and the exacerbation of gas over-commitment in the preferred plan, Vote Solar recommends that the Commission reject the Modified IRPs and implement further revisions in the Companies' IRP Updates and 2022 IRPs:

- The Commission should clarify that Modified IRPs revise, rather than supplement, base IRPs, and direct the Company to fully implement its directives across all IRP portfolios.

- The Commission should clarify that the preferred portfolio should be the sole portfolio used across planning functions, and that the Companies' Short Term Action Plans should match with implementation of the preferred portfolio.
- The Commission should direct the Companies to allow all developed utility-scale solar to be third-party-owned, in order to deliver maximum benefits to ratepayers.
- The Commission should direct the Companies to adopt a no-regrets approach to coal retirement, moving ahead with preparatory actions for retirement of units identified in Portfolio C1, while conducting the Commission-directed revision of its coal retirement analysis.
- The Commission should direct the Companies to show, rather than tell, the Commission that its portfolios are consistent with net-zero carbon commitments through a carbon compliance plan, and include associated costs into IRP cost presentation.

## **II. BACKGROUND**

### **A. Act 62 directs the Modified IRPs to address the Commission's concerns and incorporate its revisions.**

S.C. CODE ANN. § 58-37-40(C)(3) (sometimes, "Act 62") contains specific instructions for the analysis, evaluation, and approval, modification, or rejection of integrated resource plans. The law identifies specific requirements and procedures to be followed when the Commission modifies or rejects an integrated resource plan:

If the commission modifies or rejects an electrical utility's integrated resource plan, the electrical utility, within sixty days after the date of the

final order, shall submit a revised plan *addressing concerns identified by the commission and incorporating commission-mandated revisions to the integrated resource plan* to the commission for approval. Within sixty days of the electrical utility's revised filing, the Office of Regulatory Staff shall review the electrical utility's revised plan and submit a report to the commission assessing the sufficiency of the revised filing. Other parties to the integrated resource plan proceeding also may submit comments...

S.C. CODE ANN. § 58-37-40(C)(3) (emphasis added).

The law makes clear that revised plans submitted by utilities should not only implement specific revisions identified by the Commission, but also address distinct concerns identified by the Commission. While “sufficiency” is not explicitly defined in the statute, the plain language of Act 62 suggests that a revised plan would only be sufficient if it both incorporated commission-mandated revisions *and* addressed concerns identified by the Commission. Accordingly, Vote Solar's comments assess the sufficiency of the Modified 2020 IRPs according to each of these criteria.

#### **B. Additional Context for Evaluating Long-term Risks of Gas-Fired Generation Assets**

On October 13, 2021, Governor Roy Cooper signed the Energy Solutions for North Carolina Act, better known as House Bill 951, into law (“HB 951”).<sup>4</sup> Among other substantial changes to utility ratemaking, HB 951 commits the North Carolina Utilities Commission to work with utilities, including the Companies, on implementing a seventy

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<sup>4</sup> North Carolina Governor's Office (2021, October). Governor Cooper Signs Energy Bill Including Carbon Reduction Goals Into Law. Retrieved at: <https://governor.nc.gov/news/press-releases/2021/10/13/governor-cooper-signs-energy-bill-including-carbon-reduction-goals-law>.

percent reduction in greenhouse gas emissions by 2030 and achieving net-zero carbon emissions by 2050.

HB 951 will have substantial implications for the Companies' systems, which operate as a contiguous unit across the Carolinas. Even absent further action from either legislature, HB 951's creates substantial regulatory risk for any carbon-emitting asset projected to be operating through 2050—including each gas-fired unit contemplated in the Companies' 2020 Integrated Resource Plans and Modified IRPs. HB 951's passage underscores the regulatory risks posed by assets that commit the Companies to long-term carbon emissions, and, in the interest of giving due consideration to actual and foreseeable conditions and risks, further demonstrates the need to understand the Companies' long-term carbon emissions trajectory. HB 951 is attached to these comments as *Appendix VS-I*.

### **III. ANALYSIS OF THE MODIFIED IRP**

#### **A. The Modified IRPs Do Not Fully Implement the Commission's Revisions**

In the case that the Commission rejects or modifies a utility's integrated resource plan, Act 62 directs utilities to submit a revised plan that incorporates Commission-mandated revisions to the integrated resource plan. S.C. CODE ANN. § 58-37-40(C)(3). In its Order, the Commission required several revisions to be made to the Modified IRPs to ensure that the Plans secure the most prudent and reasonable means of meeting South Carolina ratepayers' needs. While the Companies at least partially implemented each of these revisions, it also made several decisions that undermine the impact of these revisions on the Plans and on future resource planning efforts by the Companies.

First, the Companies refer to portfolios developed with the Commission-mandated revisions as “supplemental” portfolios,<sup>5</sup> which might imply that the revised portfolios are an optional addition to the original IRPs portfolios rather than a mandatory, Commission-directed revision. This characterization of the Modified IRP is not found in Act 62, and the word “supplemental” does not appear in the Commission’s order requiring revisions to the Companies’ 2020 IRPs. Based on the language in Act 62, the Modified IRPs should represent a revision to, rather than a supplement of, the initial IRPs.

Second, several of the portfolios provided in the Modified IRPs implement only a subset of Commission-required revisions. Specifically, Portfolios A1, B1, C1, D1, E1, and F1 decline to implement changes to the gas price forecasts and energy storage price projections directed by the Commission in its Order.<sup>6</sup> The Companies’ failure to use the NREL ATB forecast for cost comparison inflates costs of those plans and creates inconsistencies between the Plans’ cost-optimization and final cost representation.<sup>7</sup> The Companies defend their decision to partly implement the Commission’s directed energy storage price forecast by stating that the cost declines envisioned are, in the opinion of the Companies, “exceedingly aggressive and neither reasonable nor prudent for use as a base assumption for long-term planning.”<sup>8</sup> While the Companies are entitled to state their

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<sup>5</sup> DEC Modified IRP at 6.

<sup>6</sup> DEC Modified IRP at 7.

<sup>7</sup> See Companies’ Response to ORS AIR 7-28; App. VS-3 at 12. The Companies’ Responses to various discovery requests served by the parties, following filing of the Plans, are attached as **Composite Appendix VS-3**.

<sup>8</sup> DEP Modified IRP at 27.

perception of the forecast, the Commission’s Order on the matter—that “it is reasonable to require Duke to re-run its IRP modeling using the NREL ATB Low figures”—is clear, and the Companies should follow it in the Modified IRPs.<sup>9</sup> The Companies chose not to attack the Order on this ground and are thus bound by its prescriptions.

The Companies select Portfolio C1—one of the portfolios that implement a partial revision—as their preferred portfolio, effectively negating the Commission’s required gas price forecasts and energy storage forecasts for the preferred portfolio. While additional portfolios that implement some, but not all, of the Commission’s revisions may be helpful as a sensitivity analysis, these partially-revised portfolios should not form the basis for the Companies’ preferred portfolio or future planning.

Third, the Companies include third-party owned solar at \$38/MWh as a selectable resource as directed by the Commission, but they artificially limit the availability of third-party-owned solar to half the interconnection limit, with Duke-owned cost-of-service solar representing the other half of available solar.<sup>10</sup> This decision artificially inflates the price of utility-scale solar, which increases costs overall, and could imprudently tilt the model away from selecting solar power across portfolios. If the Companies are unable to deliver solar installations at rates that are competitive with third-party developers, they should not get any special consideration in the Companies’ resource planning modeling. Any

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<sup>9</sup> Order at 18.

<sup>10</sup> Companies’ Response to ORS AIR 7-18; Comp. App. at 9.



alternative would not represent the most prudent and reasonable means of meeting the Companies' energy and capacity needs.

**B. The Modified IRPs Fail to Identify A Single, Actionable Plan**

Despite explicit direction in the Order, the Modified IRPs fail to select a single intended portfolio to be evaluated by the Commission, and instead propose to use multiple portfolios for multiple purposes.<sup>11</sup> Given the physical reality that the Companies can only implement one resource trajectory, this arrangement will likely lead to courses of action pursued by the Company that are contradictory across planning activities, rather than a self-reinforcing process that leads to prudent and reasonable decision-making.

The Modified Plans refer to Portfolio C1—which implements coal retirements identified in the 2020 IRPs and partially incorporates Commission-required revisions—as the “preferred” plan,<sup>12</sup> but the definition of “preferred” as used by the Companies in their Plans is not clear. The Plans state that the Companies' selection of Portfolio C1 “is limited to fulfilling the specific directive to identify the most reasonable and prudent means for meeting the [Companies'] long-term energy and capacity needs and such selection is not intended to dictate its use as the appropriate plan for all other legal and regulatory purposes that integrated resource planning serves.”<sup>13</sup> The Companies declined to provide a list of other legal and regulatory purposes for which a different resource plan would be

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<sup>11</sup> DEC Modified IRP at 23.

<sup>12</sup> *Id.*

<sup>13</sup> *Id.*

appropriate, or a comprehensive explanation for why the Companies might pick one portfolio in one context and a different one in another.<sup>14</sup>

It is also unclear to what extent the Companies intend to implement the preferred portfolio of its Modified IRPs, or whether the Companies are even capable of implementing Portfolio C1, as envisioned. The Companies estimate that development time of replacement resources in advance of coal retirement can range from three to six years,<sup>15</sup> and Portfolio C1's accelerated retirement of coal units at the Mayo and Marshall plants, in 2026 and 2028, respectively, place preparatory actions for retirement—including RFPs for replacement resources—squarely in the 5-year period covered by the Short Term Action Plan. Additional steps to implement retirement of these plants along this timeline, however, are not discussed in detail within the Plans. The Companies' statement, that they "do not view the differences between the 2020 IRPs filed in North Carolina and the 2020 SC Modified IRPs as significant[.]" illuminates how little weight the Companies place on the preferred designation and implications it might have for short-term procurement or preparations for retirement of the Companies' coal units.<sup>16</sup>

Such treatment of the integrated resource planning process obscures the actual resource portfolio being pursued by the Companies. By presenting several distinct construction plans across several venues, the Companies create conflicting expectations

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<sup>14</sup> Companies' Response to ORS AIR 7-16; App. VS-3 at 5-6.

<sup>15</sup> Companies' Response to ORS AIR 7-8; App. VS-3 at 3.

<sup>16</sup> Companies' Response to CCEBA DR 1-10; App. VS-3 at 20.

about future resource planning decisions. Such an outcome would erode the Commission's ability to ensure the most affordable and reliable service to South Carolina ratepayers.

The Companies' decision to decouple the preferred plan from actual permitting, construction, and investment decisions also significantly undermines the Commission's authority under Act 62. By selectively applying Commission revisions across proceedings and declining to make any changes to actual planning, permitting, investment, or construction plans for new generation resources due to those revisions, the Modified IRPs reduce the Commission's ordering paragraphs to a series of suggestions, rather than a clear directive to change actual on-the-ground decisions. To ensure electricity needs are met by the most reasonable and prudent means, the Commission should clarify that its revisions are not optional and that the Companies must make their intentions regarding resource procurement clear.

### **C. The Preferred Portfolio Exacerbates Long-Term Risks Due to Over-Reliance on Gas-Fired Generation**

The Companies and the Commission both identify long-term risks associated with continued carbon emissions as a material concern for the Companies' ongoing resource planning operations. The Order "commends Duke for its substantial progress in reducing reliance on coal," but also "finds that ... [the Companies risk] reversing that progress by over-committing to natural gas generation."<sup>17</sup> The Companies explain that their preferred portfolio should "accelerate carbon reduction, while ensuring affordability and reliable

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<sup>17</sup> Order at 63.

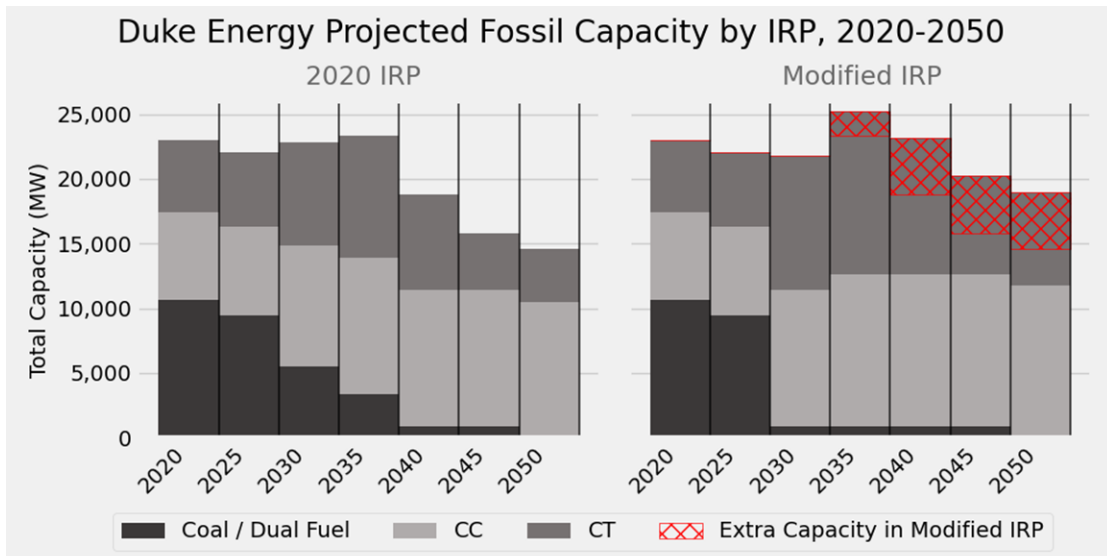
service for customers.”<sup>18</sup> By selecting a portfolio that prioritizes early retirement of the Companies’ coal fleet, the Companies might achieve each of these goals. Meaningful analysis, however, reveals the Companies will fall short.

The Modified Plans undermine carbon reduction goals and long-term risk mitigation by replacing retiring coal plants with a substantial increase in the Companies’ planned buildout of gas-fired power plants. Compared to the Base Case with Carbon Policy as proposed in the 2020 IRPs (“Base Case 2020 IRP Portfolio”), Portfolio C1 introduces an additional 1,224-megawatt combined-cycle plant and seven additional 457-megawatt combustion turbines. In exchange for moving several coal retirement dates forward and bringing an additional 2,220 megawatts of coal retirement into the planning period (Belews Creek 1 and 2), Portfolio C1 adds an additional 3 gigawatts of combustion turbine capacity and 1,224 MW of combined-cycle capacity.

The Companies’ selected investment plan locks in changes to the generation fleet that stretch beyond the planning period. *Figure 1* shows the total fossil-fueled capacity of the combined DEC/DEP system under the Base Case with Carbon Policy plan from the Companies’ Base 2020 IRP versus Portfolio C1 from the Modified IRP.

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<sup>18</sup> DEP Modified IRP at 13.

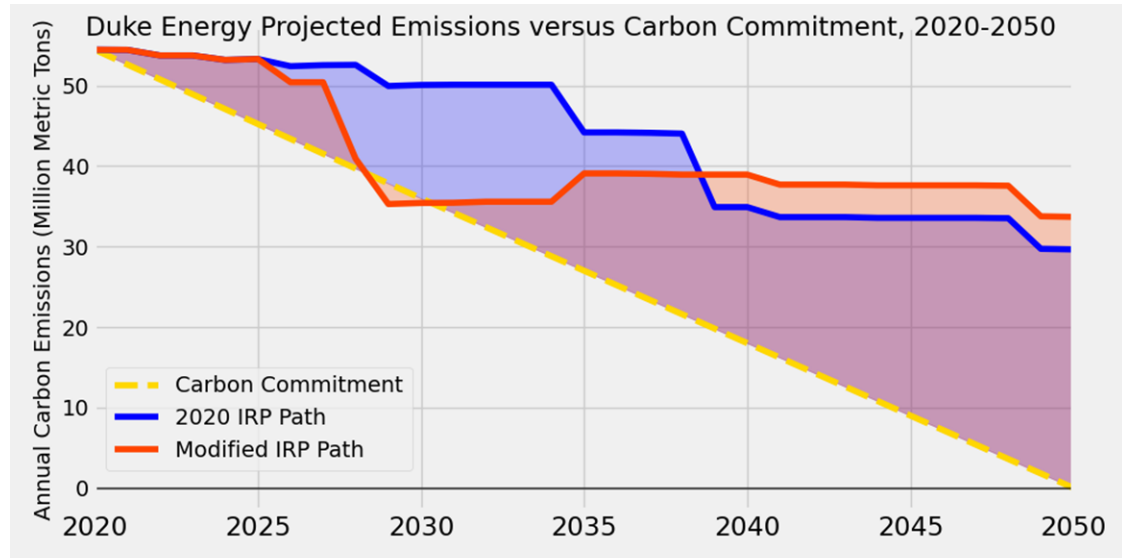


*Figure 1. Projected fossil-fueled capacity by fuel type, 2020-2050. The left side illustrates the “Base Case with Carbon Policy” from the 2020 IRPs, and the right side illustrates Portfolio C1 from the Modified IRPs. The area shaded in red represents additional fossil capacity, compared to the 2020 IRPs.*

While the Modified IRP executes a rapid departure from coal, it also entrenches a long-lived surplus of gas-fired assets. The area shaded in red in *Figure 1* shows the additional carbon-emitting capacity, after netting out accelerated coal retirements, anticipated in Portfolio C1 of the Modified IRPs. In 2050, pursuing Portfolio C1 would result in an additional 4.4 gigawatts of carbon-emitting capacity—30 percent greater than the Base Case with Carbon Policy from the 2020 IRPs.

Using historical operations of the Companies’ carbon-emitting fleet as a predictor of future emissions, carbon emissions for investments contemplated in Portfolio C1 can be projected and compared against the Base Case 2020 IRP Portfolio. *Figure 2* shows carbon emissions trajectories for the Base Case with Carbon Policy scenario from the Base 2020 IRP alongside emissions projections for the Modified IRPs’ Portfolio C1. Both are

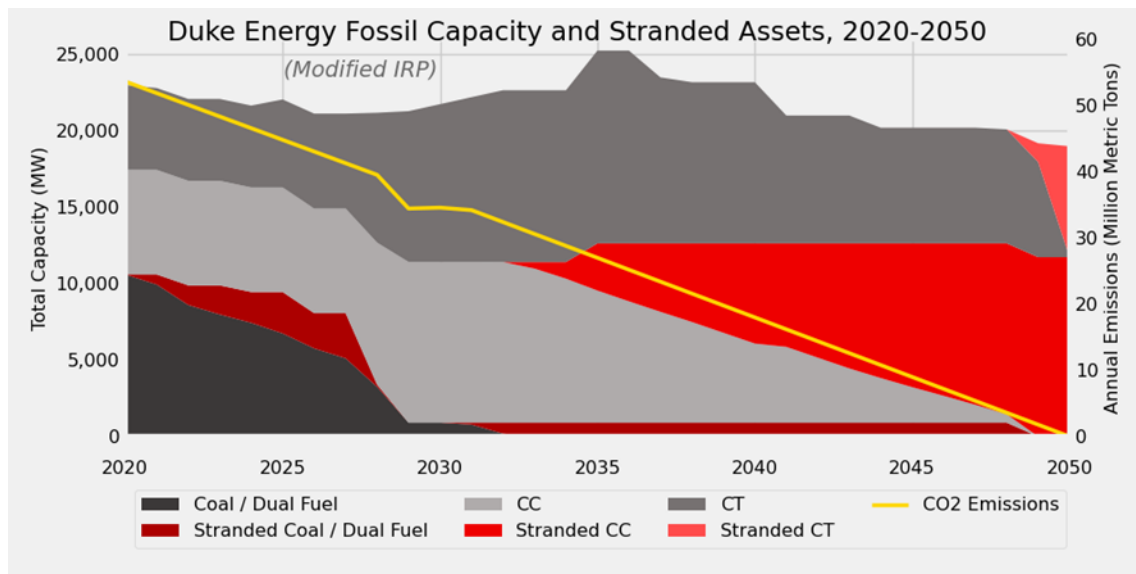
compared against a linear compliance pathway toward Duke Energy's 2050 corporate zero-carbon commitment.<sup>19</sup>



*Figure 2. Projected Annual Carbon Emissions 2020-2050 of the Modified IRP Portfolio C1 versus the 2020 IRP Base Case with Carbon Policy Portfolio. Both are compared with a linear compliance trajectory toward zero emissions in 2050.*

While accelerated coal retirements contemplated in Portfolio C1 enable rapid carbon reduction—and even briefly reach compliance with Duke's carbon commitment trajectory near year 2030—Base Case 2020 IRP Portfolio's emissions decrease to meet Portfolio C1's once Mayo 1 reaches its retirement date in the mid-2030s. *Figure 2* demonstrates that additional gas construction in the short term leads, in turn, to greater long-term emissions once the exit from coal has been completed.

<sup>19</sup> See generally Hr. Ex. 5.



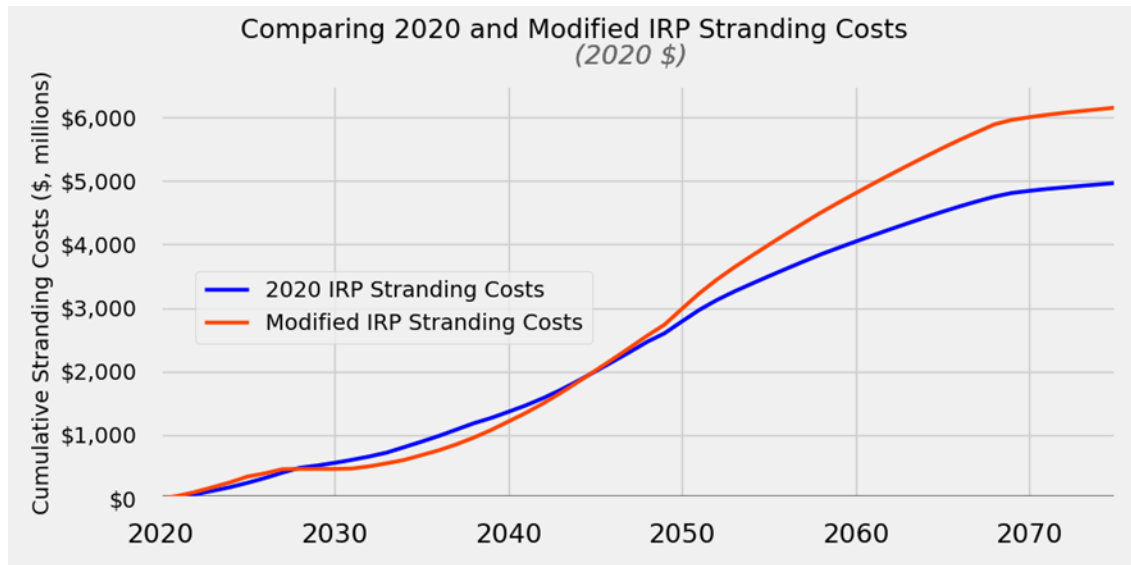
*Figure 3. Modified IRP Portfolio C1 fossil-fueled capacity, 2020-2050. Generation capacity is retired early, and therefore “stranded” to comply with carbon commitments.*

To assess long-term stranded asset risks, Vote Solar conducted an analysis using the same methodology as the Carbon Stranding Report conducted on the Companies’ 2020 IRPs.<sup>20</sup> At a high level, the carbon stranding analysis projects annual carbon emissions from the Portfolio C1, then retires fossil-fueled assets in order to comply with carbon commitments. *Figure 3* shows the capacity of assets that would be required to be stranded to meet Duke Energy and North Carolina carbon commitments of net-zero by 2050. While carbon stranding briefly pauses where emissions are in line with zero-by-2050 commitments, stranded assets resume through the 2030s. By the late 2040s, almost 10 gigawatts of gas-fired combined-cycle plants are taken offline to comply with carbon

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<sup>20</sup> Hr. Ex. 22.

commitments. An update to the Carbon Stranding Report analyzing stranded asset risks in Portfolio C1 is attached to these comments as *Appendix VS-2*.



*Figure 4. Cumulative stranded asset costs to ratepayers, Modified IRPs Portfolio C versus 2020 IRP Base Case with Carbon Policy*

Figure 4 shows cumulative total stranding costs for all fossil resources from 2020 to the last expected operating year for plants contemplated in the Base Case 2020 IRP Portfolio and the Modified IRPs' Portfolio C1. Portfolio C1's accelerated coal retirement decreases cumulative stranding costs through the 2030s, but the additional gas-fired capacity built in the latter half of the planning period cause Portfolio C1's long-term cumulative costs to be significantly higher than the Base IRP. In total, stranded costs for Portfolio C1 reach \$6.1 billion, or a \$1,100 bill payable today by each residential customer in the Companies' service territory. Portfolio C1's total stranded asset costs to rate payers exceed the Base Case 2020 IRP Portfolio's \$4.8 billion by over \$1 billion, or a 27 percent increase.



This carbon stranding analysis demonstrates the long-term risks implicated in integrated resource planning. While the IRPs' planning period for reliability purposes is fifteen years, decisions made in the short term can and will have long-lived economic impacts for the energy system, extending to mid-century and even beyond. Accelerated coal retirements contemplated in Portfolio C1 achieve short-term emissions reductions and cost savings, but the resources selected to replace retiring coal plants have substantial implications for long-term affordability and sustainability. Ultimately, the carbon stranding analysis shows the need for long-term thinking when evaluating carbon reduction trajectories.

**D. The Companies' Attempts to Reconcile its Gas Buildout with its Carbon Commitments**

To reconcile the Companies' contemplated build-out of gas-fired plants with carbon commitments, the Modified IRPs identify potential technical methods for addressing carbon emissions from gas generation. The Companies should explore every avenue for cost-effectively decarbonizing their operations, but pointing to technical solutions without understanding the feasibility and cost implications of these strategies could contribute to, rather than mitigate, stranded cost risks.

The Plans identify switching from methane to hydrogen fuels as a pathway toward decarbonizing its gas-fired fleet. Specifically, the Modified IRP notes that "new natural gas generators shown in these portfolios will be capable of utilizing a minimum of 30%

hydrogen, with later additions potentially reaching 100% hydrogen capability by 2030.”<sup>21</sup> If fuels could be substantially replaced by zero-carbon hydrogen, as the Plans imply, then the buildout of these gas-fired plants could be compatible with a zero-carbon future.

The implementation of such a substitution, however, raises immediate and substantial questions that are not considered in the Plans. Existing gas pipelines are incapable of transporting hydrogen *en masse*,<sup>22</sup> and therefore any plan to use a meaningful amount of hydrogen would also entail development (and financing) of an additional fuel supply, storage, transport, and delivery system. Even if equipment, sourcing, and transport challenges were all solved at scale, the Hydrogen Council forecasts a levelized cost of hydrogen-fueled power at \$140/MWh.<sup>23</sup> The hydrogen substitution suggested in the Plans implies substantial capital investment with considerable uncertainty, but these costs and uncertainties are not explored by the Companies. If the Companies intend to pursue investment in these technologies, they should be subject to the same comprehensive risk and cost evaluation as other options contemplated in the Plans. If cost or feasibility complications render hydrogen substitution impractical, the Companies could be committed to several gigawatts of carbon-emitting assets with no feasible path toward decarbonization.

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<sup>21</sup> DEC Modified IRP at 9.

<sup>22</sup> Saadat, S. & Gersen, S. (2021, August). Reclaiming Hydrogen for a Renewable Future. *Earthjustice*. P. 19. Retrieved at: [https://earthjustice.org/sites/default/files/files/hydrogen\\_earthjustice\\_2021.pdf](https://earthjustice.org/sites/default/files/files/hydrogen_earthjustice_2021.pdf).

<sup>23</sup> The Hydrogen Council (2020, January). Path to hydrogen competitiveness: A cost perspective. P. 58. Retrieved at: [https://hydrogencouncil.com/wp-content/uploads/2020/01/Path-to-Hydrogen-Competitiveness\\_Full-Study-1.pdf](https://hydrogencouncil.com/wp-content/uploads/2020/01/Path-to-Hydrogen-Competitiveness_Full-Study-1.pdf).

The Modified IRPs also identify a “gradual shift in mission over the long term towards ultimately backstanding renewables and storage[ ]” for its gas-fired fleet.<sup>24</sup> By reducing capacity factor and total generation of the carbon-emitting fleet over time, the Companies could achieve (incremental) carbon reductions and make room for additional zero-carbon generation.

Forecasted generation for Portfolio C1, however, does not reflect an anticipated change to the “mission” of the gas-fired fleet. *Figure 5*, below, shows projected annual power generation from the Companies’ gas-fired fleet over the planning period. From 2021 to 2035, gas-fired generation grows by over 20,000 GWh per year—an increase of almost 60 percent. While this increase is driven in large part by the exit of coal from the generation portfolio, the portfolio does not reflect a substantial shift away from carbon-emitting generation: Total carbon-emitting generation decreases by less than 1 percent per year through the planning horizon.

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<sup>24</sup> DEC Modified IRP at 16.

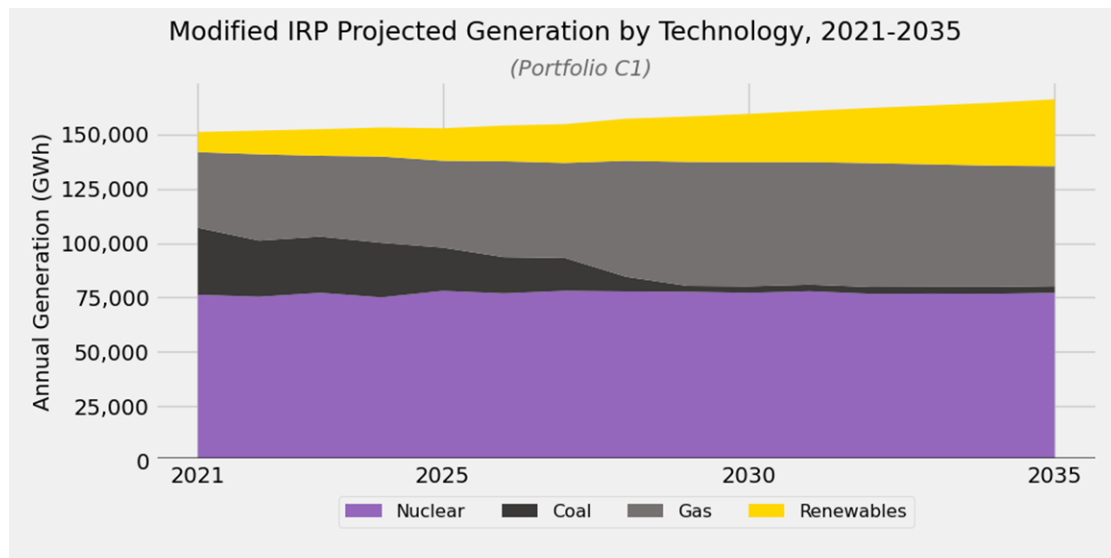


Figure 5. Projected Generation by Technology for Modified IRP Portfolio C1<sup>25</sup>

If the Companies intend to pursue a shift in mission over the long term, their resource plans should reflect this choice and plan accordingly. Portfolios committed to a low-capacity-factor trajectory for gas-fired could, for example, integrate more solar to meet this energy shortfall. The Modified IRPs do not contemplate or implement a change in capacity factor, and therefore do not provide any guidance to the Commission or the Companies for implementing this mission shift prudently and reasonably.

#### IV. CONCLUSIONS AND RECOMMENDATIONS TO THE COMMISSION

##### 1. Implementing the Commission's Revisions

The Companies' Modified 2020 IRPs only partially incorporate the revisions required by the Order, and the text of the Plans undermines the mandatory, corrective nature of the Order's revisions. For example, the Plans designate the revised portfolios as

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<sup>25</sup> Data from Companies Response to CCEBA Data Request 1-9.

“supplemental;” the Plans fail to implement the Commission’s directed gas and storage price forecasts across all portfolios, including the “preferred” portfolio; the Plans continue to use their own storage costs for cost reporting; and the Plans artificially limit the reach of third-party-owned solar. **The Commission should clarify that its revisions are meant to correct, rather than supplement, the Companies’ 2020 IRPs, and direct the Companies to implement all directed revisions across all potential portfolios, including the preferred portfolio.**

## 2. The Preferred Portfolio

The Commission notes in the Order that any integrated resource plan that meets with Act 62’s requirements must “(1) identify a preferred portfolio from the range of portfolios analyzed and (2) include a short-term action plan that identifies steps the utility will take to achieve that preferred portfolio.”<sup>26</sup> The Commission also states that the Companies’ intention to use different portfolios across different proceedings “does not make sense because Duke will actually operate under only one portfolio of the resource plans.”<sup>27</sup> While the Modified IRPs do identify a preferred plan as directed by the Commission, the Modified Plans are clear that the Companies still intend to use multiple portfolios across various proceedings. Further, coal retirements contemplated in the preferred portfolio may not be implementable in the timeline described, and the Modified IRPs show no changes to the Companies’ short-term actions that would begin to realize the

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<sup>26</sup> Order at 8.

<sup>27</sup> Order at 11.

preferred portfolio. This treatment reduces the preferred portfolio to little more than a formal designation, rather than the identified “method to achieving an end” contemplated by the Commission.<sup>28</sup> **The Commission should clarify that selection of a preferred portfolio entails a commitment by the Companies toward realizing the selected plan. Therefore, IRPs that select a preferred portfolio should shift IRPs’ short-term action plans toward realizing that portfolio, and other regulatory proceedings should consistently use the preferred portfolio as a basis for forecasting new resources. Accordingly, any portfolio designated as preferred by the Companies should be implementable as described in the Plans.**

### **3. Implementing Coal Retirement Timing**

The Companies note in their justification for preferring Portfolio C1 in the Modified IRPs that “the ‘most reasonable and prudent plan’ should prioritize retirement of the Company’s existing coal fleet” to achieve the Companies’ goals of carbon reduction, affordability, and reliability. However, several challenges exist for realizing Portfolio C1’s envisioned coal retirements. First, the Commission directed the Companies to conduct a new coal retirement analysis in their 2022 IRPs.<sup>29</sup> Second, accelerated retirement and replacement timelines for coal units contemplated in Portfolio C1 (specifically, the Mayo and Marshall units) do not match the Companies’ short-term action plans. While the 2022 coal retirement analysis could bring more clarity to future coal retirement discussions, it

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<sup>28</sup> Order at 8.

<sup>29</sup> Order at 17.

could also delay any further preparatory actions for retiring the Companies' coal fleet, possibly until the Commission issues an order on the 2022 IRPs in 2023 Q2. **The Commission should direct the Companies to follow a no-regrets approach to coal retirement by continuing work on preparations for retirement of coal facilities within Portfolio C1's planning horizon, including potential requests for information on potential replacement resources, while conducting the updated coal retirement analysis to be presented in the Companies' 2022 IRPs.**

#### **4. Long-term Risks Associated with Over-Reliance on Gas**

Both the Companies and the Commission have identified long-term risks associated with carbon-emitting generation as a relevant concern for long-term resource planning. The selection of Portfolio C1 as the preferred portfolio, for example, was partly justified by the short-term carbon reductions that might be realized by retiring the Companies' coal fleet early. However, the Companies' plans to replace retiring coal with an expanded buildout of gas-fired generation locks in long-term emissions, trading a short-term problem for a long-term one. **The Commission should take a long-term approach to long-term risks associated with continued carbon emissions and direct the Companies to conduct an analysis that demonstrates compliance pathways toward net-zero emissions operations in 2050 and present an intended lifetime plan, including anticipated retirement date and/or any anticipated technical retrofits, for any contemplated new carbon-emitting generation asset.**

## 5. Evaluation of Carbon Mitigation Technologies

The Companies identify two potential technical fixes—namely, substituting zero-emissions hydrogen for methane and substantially reducing capacity factors across the fleet—as ways to reconcile the contemplated buildout of gas-fired resources with zero-carbon commitments across the Companies’ systems. However, the Companies do not substantively explore the cost or feasibility implications for either option. By pointing to these options without including even placeholder costs, the Companies tilt the playing field toward gas-fired resources and away from zero-carbon resources, which do not require any long-term technical fix for their emissions. **The Commission should direct the Companies to perform a high-level assessment of costs for zero-carbon hydrogen substitution across its portfolio, and incorporate any anticipated or stated reduction in capacity factor across its gas resources into capacity expansion and production cost modeling.**

## 6. Evaluation of the Modified IRPs as a Whole

Act 62 directs the Companies to file a revised plan that both addresses the Commission’s concerns and incorporates the Commission’s mandated revisions into its plan. S.C. CODE ANN. § 58-37-40(C)(3). In its Modified IRPs, the Companies presented plans that fail to fully incorporate the Commission’s required revisions to its modeling, decline to designate a single portfolio to be consistently used across short-term actions and the Companies’ other planning functions, and do not adequately address the concerns raised by the Commission regarding the long-term risks of over-reliance on gas-fired generation. As such, the Modified IRPs filed by the Companies do not satisfy the directive



for revised plans described in Act 62. **The Commission should not accept the Companies' Modified IRPs, for want of compliance with the Order and Act 62.**

**V. RELIEF SOUGHT**

Vote Solar appreciates the Commission's rigorous and continued commitment to achieving the most prudent and reasonable means for meeting South Carolina ratepayers' needs in this proceeding. The Commission's order requiring modifications to the Companies' Integrated Resource Plans sets an agenda, across several distinct components of the Plans and the Companies' Modified Plans, IRP Update, and 2022 IRPs, that will ensure that the Companies' Plans inch closer to the most reasonable and prudent standard.

Vote Solar also appreciates the Companies' compliance with some of the Commission's revisions in their Modified IRPs and the inclusion of carbon reduction as a key factor in determining the most reasonable and prudent plan. However, the Modified IRPs decline to fully implement the Commission's revisions and fail to address concerns raised by the Commission in their Order. Accordingly, Vote Solar recommends that the Commission **not** accept the Modified IRP and direct the Companies to complete several further remedies, to be implemented in the IRP Updates and 2022 IRPs, as follows:

- The Companies' filings should be required to clarify that Modified IRPs as described in Act 62 revise, rather than supplement, original IRPs.
- The Companies should be required to implement all Commission-required revisions to all portfolios presented in Base IRPs, and the preferred portfolio should implement all Commission-directed revisions. Commission-required revisions to

cost forecasts should be used for both resource selection and cost estimation purposes.

- The Companies should be required to allow third-party-owned solar, purchased at rates designated in the Commission's Order, as a procurement option up to the Companies' interconnection limit.
- The Companies should be required to identify a preferred portfolio to be used across all further planning proceedings, and it should be required to revise its Short Term Action Plans to match any changes to the preferred portfolio.
- The Companies should be required to implement a no-regrets approach to coal retirement, including preparatory actions and requests for information for retirement along the timeline described in Portfolio C1, while conducting its new retirement analysis for the 2022 IRPs.
- The Companies should be required to complete a carbon compliance plan alongside any portfolio put forward in the IRPs that assesses the extent to which the preferred portfolio is reconcilable with net-zero emissions by 2050 and evaluates any potential costs to ratepayers that could be incurred in order to achieve net-zero emissions. If declining capacity factors or early retirement for gas-fired generation are utilized in the carbon compliance analysis, these should be integrated into capacity expansion and production cost modeling.
- The Companies should be required to conduct a high-level cost assessment of zero-carbon hydrogen substitution, including but not limited to changes in capital costs

for hydrogen-capable generators that meet air quality standards, capital expenditures in securing firm hydrogen sourcing, storage, transport, and delivery, changes to fuel costs associated with substituting hydrogen, and any other costs associated with hydrogen substitution.

Respectfully submitted,

October 26, 2021

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#### CERTIFICATE OF SERVICE

I HEREBY CERTIFY on October 26, 2021 a true and correct copy of the foregoing was served via electronic mail upon the parties of record, in accordance with the service list attached hereto.

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